

Methods 2 Revision : Algebra

1(a) (i) 9 (ii) 9 (iii) 45 (iv) 16 (v) 14 (vi) 2

(A6)

(b) (i) 12 (ii) 16 (iii) 80 (iv) 26 (v) 14 (vi) 3

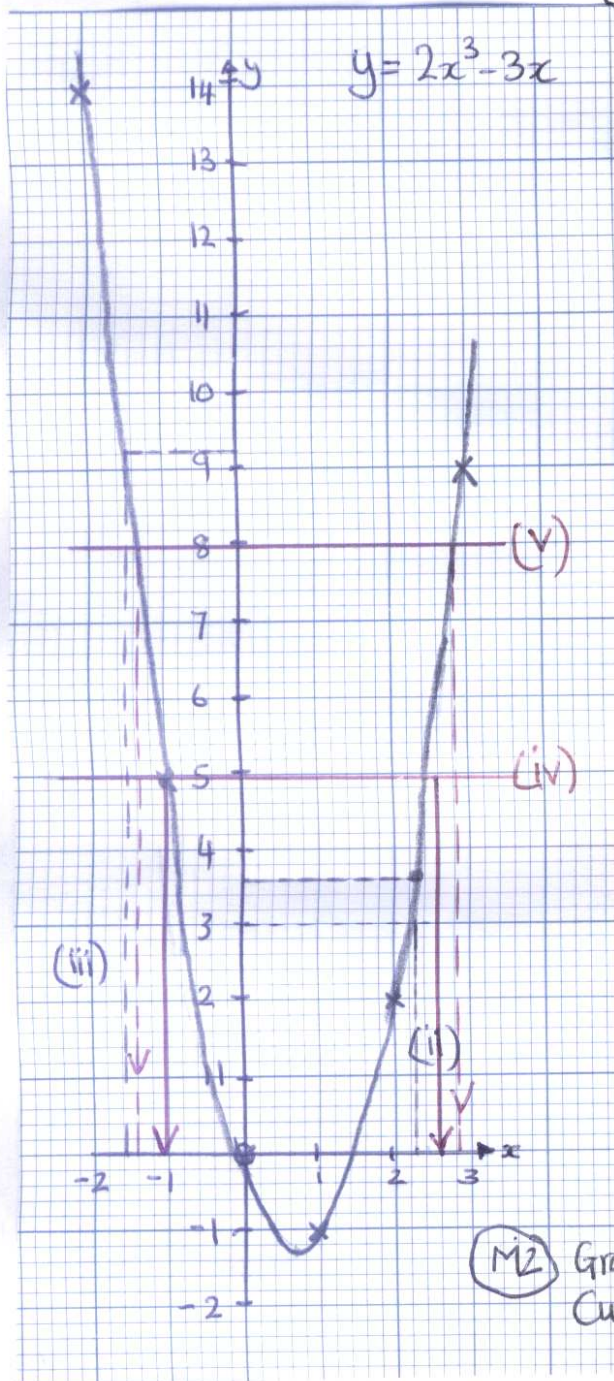
(A6)

[12]

2(a)(1) x | -2 -1 0 1 2 3

y | 14 5 0 -1 2 9

(M2)

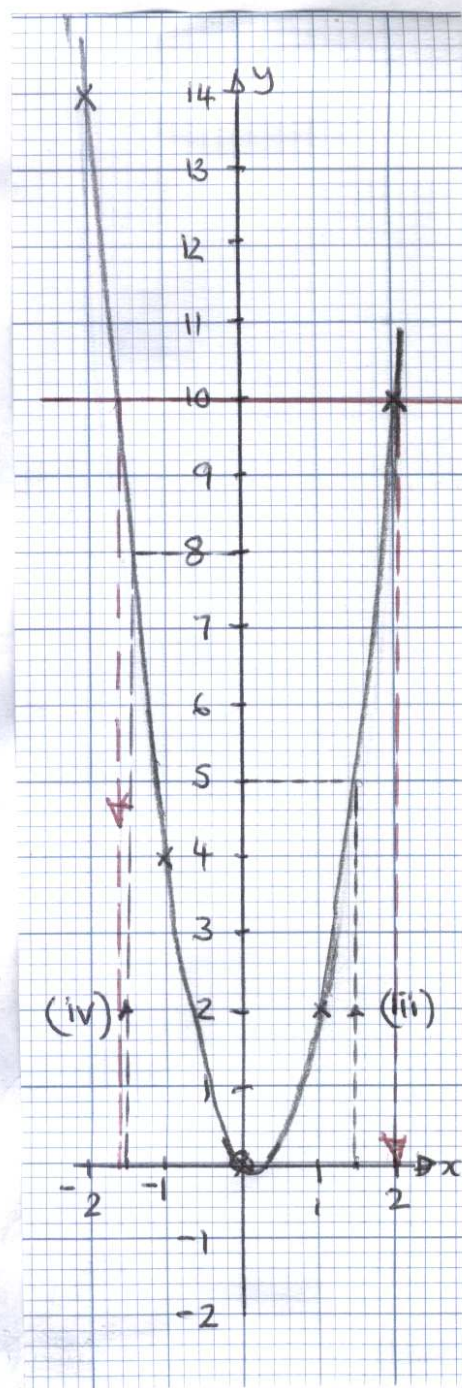


(M2) Graph Curve

2(b) x | -2 -1 0 1 2

y | 14 4 0 2 10

(M2)



(M2) Graph Curve

- (ii) About 5.25 (accept graph value) (A1)
- (iv) About 8.25 (- " -) (A1)
- (v) About -1.6 and 2 (- " -) (A2)

[8]

- (ii) About 3.7 (accept value read from graph) (A1)
- (iii) About 9 (- " -) (A1)
- (v) About -1 and 2.5 (- " -) (A2)
- (vi) About -1.4 and 2.8 (- " -) (A2)

[10]

3(a) $2x + 3 < 11$

$2x < 8$

$x < 4$

(M)

(A1)

(b) $5x - 7 > 43$

$5x > 50$

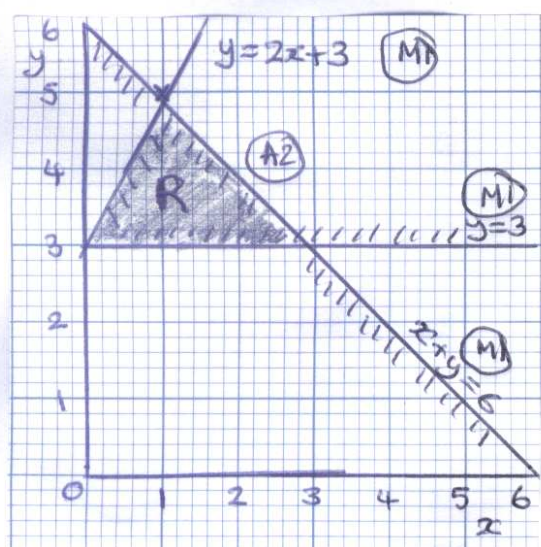
$x > 10$

(M)

(A1)

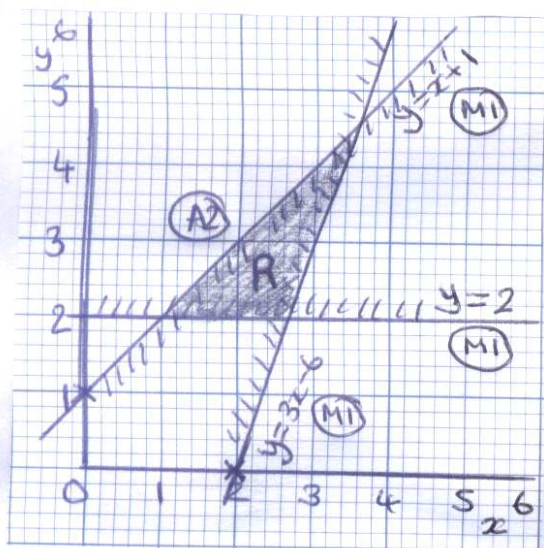
[4]

4(a)



[5]

(b)



[5]

5(a) $2r + 3s = 6$ (1)

$3r - 2s = 22$ (2)

(1) $\times 2$ $4r + 6s = 12$ (3) (M1)

(2) $\times 3$ $9r - 6s = 66$ (4)

(3) + (4) $13r = 78$ (M1)

$r = 6$ (A1)

From (1) $12 + 3s = 6$

$3s = -6$

$s = -2$ (A1)

(Check (2)) $18 + 4 = 22 \checkmark$

[4]

5(b) $h + 3t = -10$ (1) (M1)

$2h - t = 8$ (2)

(1) $\times 1$ $h + 3t = -10$ (3)

(2) $\times 3$ $6h - 3t = 24$ (4)

(3) + (4) $7h = 14$ (M1)

$h = 2$ (A1)

From (1) $2 + 3t = -10$

$3t = -12$

$t = -4$ (A1)

(Check (2)) $4 + 4 = 8 \checkmark$

[4]

-2-

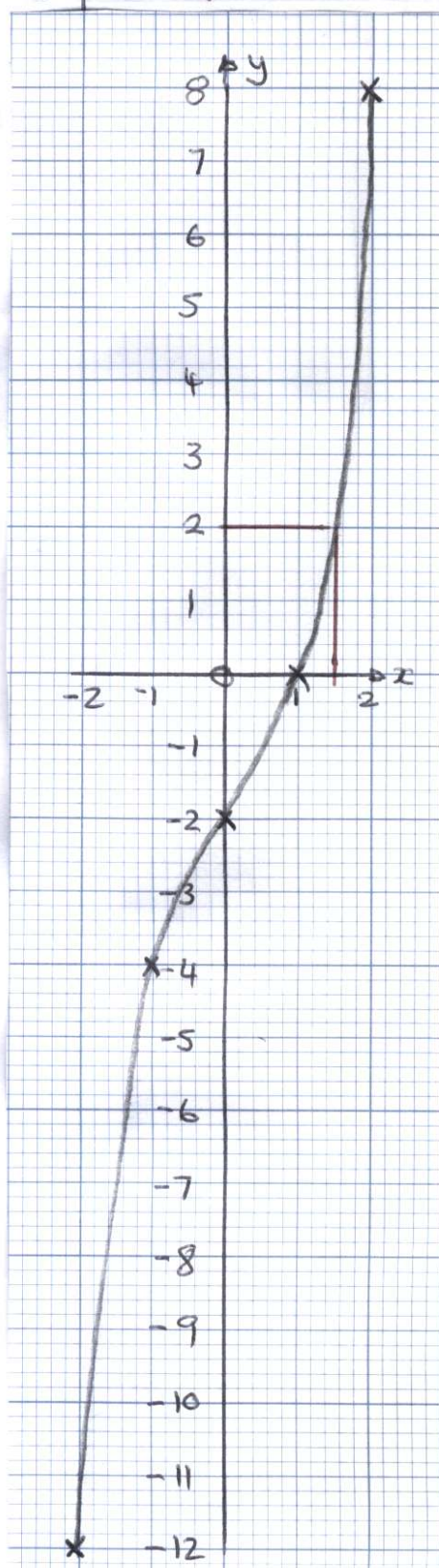
6(a) $x=3, y=4$ (3,4) (A2)

(b) $x=2, y=4$ (2,4) (A2) [4]

7(a) $y = x^3 + x - 2$

x	-2	-1	0	1	2
y	-12	-4	-2	0	8

(M2)



(M2) graph

(iii) About 1.5

(A1)

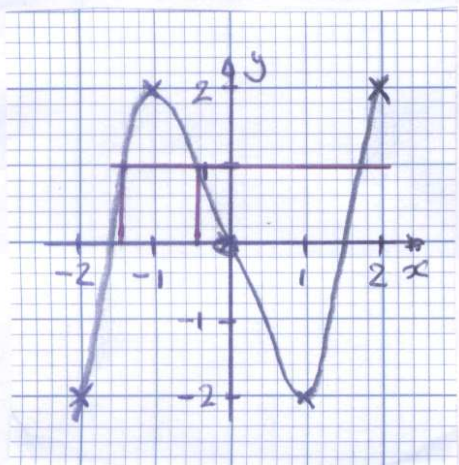
Methods 2 Revision 1 Algebra

7(b)

x	-2	-1	0	1	2
y	-2	2	0	-2	2

(M2)

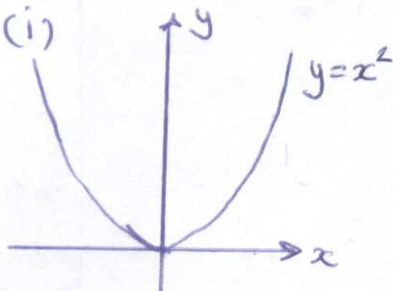
(ii)



(M2)
graph

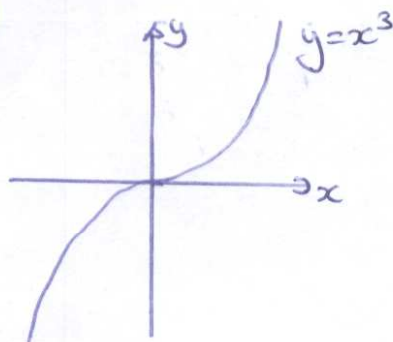
(iii) -0.4, -1.4, 1.7 (approx) (A1)

8(a) (i)



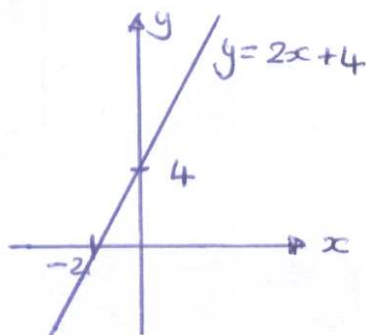
(A1)

(ii)



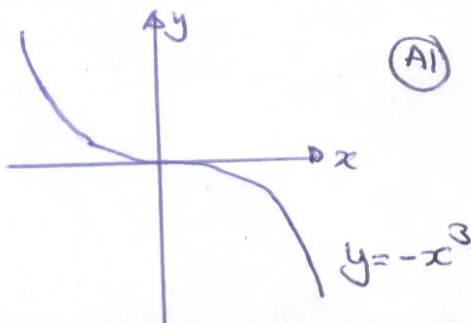
(A1)

(iii)



(A1)

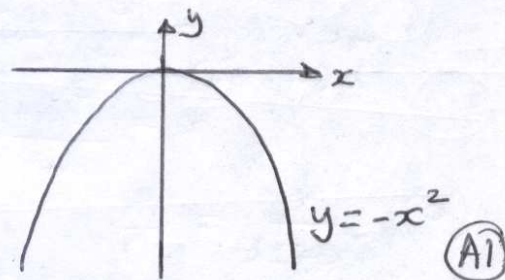
(iv)



(A1)

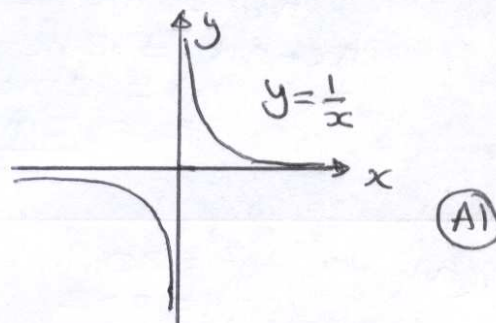
[4]

8(b) (i)



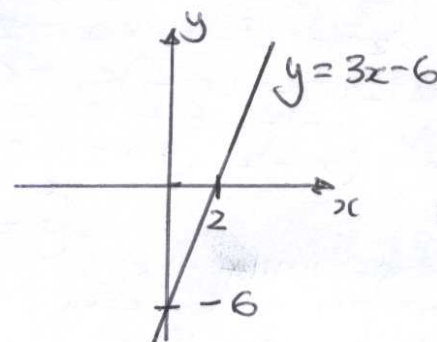
(A1)

(ii)



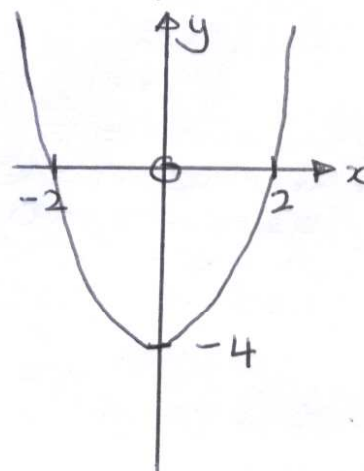
(A1)

(iii)



(A1)

(iv)



(A1)

[4]

9(a) a=3 b=7 c=-12

$$x = \frac{-7 \pm \sqrt{7^2 - 4 \times 3 \times -12}}{2 \times 3} \quad (M1)$$

$$x = \frac{-7 \pm \sqrt{193}}{6} \quad (M1)$$

$$x = 1.15 \text{ or } -3.48 \quad (A2)$$

(b) a=2 b=-5 c=1

$$x = \frac{5 \pm \sqrt{(-5)^2 - 4 \times 2 \times 1}}{2 \times 2} \quad (M1)$$

$$= \frac{5 \pm \sqrt{17}}{4} \quad (M1)$$

$$= 2.28 \text{ or } 0.22 \quad (A2)$$

[8]

$$10(a) \quad 4(x-6) = y(4-3x)$$

$$4x - 24 = 4y - 3xy \quad (M1)$$

$$4x + 3xy = 4y + 24 \quad (M1)$$

$$x(4+3y) = 4y+24 \quad (M1)$$

$$x = \frac{4y+24}{4+3y} \quad (A1)$$

$$(b) \quad \frac{x}{x+2t} = \frac{m}{n}$$

$$nx = mx + 2mt \quad (M1)$$

$$nx - mx = 2mt \quad (M1)$$

$$x(n-m) = 2mt \quad (M1)$$

$$x = \frac{2mt}{n-m} \quad (A1) \quad [8]$$

$$12(B) a) y = \frac{1}{2}x + c \text{ where } c \neq 4 \quad (A1)$$

$$b) y = mx + 4 \text{ where } m \neq \frac{1}{2} \quad (A1)$$

$$c) y = -2x + k \quad (M1)$$

Goes through (8,8)

$$8 = -2 \times 8 + k \quad (M1)$$

$$k = 24$$

$$y = -2x + 24 \quad (A1)$$

[5]

$$11.(a) \quad x^2 + y^2 = 20$$

$$y = x - 2$$

$$x^2 + (x-2)^2 = 20 \quad (M1)$$

$$x^2 + x^2 - 4x + 4 = 20 \quad (M1)$$

$$2x^2 - 4x - 16 = 0 \quad (M1)$$

$$x^2 - 2x - 8 = 0$$

$$(x-4)(x+2) = 0 \quad (M1)$$

$$x = 4 \text{ or } -2 \quad (A1)$$

$$y = 2 \text{ or } -4 \quad (A1)$$

(Geometrically the line $y = x - 2$ cuts the circle $x^2 + y^2 = 20$ at the points (4,2) and (-2,-4))

$$(b) \quad x^2 + y^2 = 13$$

$$y = x + 1$$

$$x^2 + (x+1)^2 = 13 \quad (M1)$$

$$x^2 + x^2 + 2x + 1 = 13 \quad (M1)$$

$$2x^2 + 2x - 12 = 0 \quad (M1)$$

$$x^2 + x - 6 = 0$$

$$(x+3)(x-2) = 0 \quad (M1)$$

$$x = -3 \text{ or } 2 \quad (A1)$$

$$y = -2 \text{ or } 3 \quad (A1)$$

(Intersect at (-3,-2) and (2,3))

[12]

$$12.(A) a) y = \frac{1}{3}x + c \text{ where } c \neq 5 \quad (A1)$$

(c = constant)

$$b) y = mx + 5 \text{ where } m \neq \frac{1}{3} \quad (A1)$$

$$c) y = -3x + k \quad (M1)$$

Goes through (6,7)

$$7 = -18 + k \quad (M1)$$

$$k = 25$$

$$\text{So } y = -3x + 25 \quad (A1)$$

[5]